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FINAL TECHNICAL REPORT

NAGW 1422

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
PLANETARY GEOLOGY AND GEOPHYSICS PROGRAM

MARS GEOLOGIC MAPPING

STRATIGRAPHY AND SURFACE PROCESSES IN THE ELYSIUM--UTOPIA REGION OF MARS

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TITLE: Stratigraphy and Surface Processes in the Elysium--Utopia Region of Mars

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OBJECTIVES

The original grant request proposed geologic mapping of four quadrangles at the 1:500,000 scale. The quadrangles proposed were MTM 35207, MTM 35212, MTM 3517, and MTM 35222.

The four sheets form a strip across the south central portion of MC 7SC and provide a comprehensive sampling of terrains associated with the transition from Elysium lava flows to other materials. The two eastern sheets include the northern flanks of Hecates Tholus, and the two western sheets include Hrad Valles, possible mud flows,and modified terrain.

SUBSEQUENT MODIFICATIONS OF THE PROJECT

The original proposal was for four maps at a cost of one map. Graduate students were to use at least one map for a thesis project. In addition, the proposed set overlapped a proposal of Peter Mouginis-Mark, and graduate student participation never developed.

The final agreement with Dave Scott (USGS, Flagstaff) was for this grant to include prime responsibly for two

maps--MTM 35217 and 35222 with Mouginis-Mark as coauthor. De Hon will be second coauthor on the eastern sheets.

ACCOMPLISHMENTS

Mapping began on MTM 35217 (Galaxias Quadrangle). A version was submitted for review. At that time it was decided by Scott that both quadrangles would be printed on a single map sheet. Mapping on MTM 35222 has progressed at a slower rate. A combined map and text is planned for submission to review in mid-summer 1992.

A poster session of the Galaxais Quadrangle was presented at LPSC. A paper discussing the possible origin of Hrad Valles was presented at the Annual Meeting of the Geological Society of America and at the Lunar and Planetary Science Conference. That paper was published in the Proceedings of the 22nd Lunar and Planetary Conference.

The Galaxias quadrangle contains Amazonian volcanic, volcano-clastic, and fluvial materials. The region also displays fluvial and possible thermal karst alteration of the surface. Hrad Vallis is a prominent feature in the western part of the quadrangle.

PUBLICATIONS

De Hon, R.A. and P.J. Mouginis-Mark, 1990, Geologic map of the Galaxias region (MTM 35217) northwestern Elysium Region, Mars: Lunar and Plant. Sci. Conf. XXI, p. 268-269.

De Hon, R.A., 1990, Fluvial history of Hrad Vallis, Northern Elysium Planitia, Mars: Geological Society of America Annual Meeting.

De Hon, R.A., 1991, Polygenic origin of Hrad Vallis, Mars: Lunar Planet. Sci. Conf, XXII, p. 295-296.

De Hon, R.A., 1991, Polygenic origin of Hrad Vallis, Mars: Proc. 22nd Lunar Planet. Sci. Conf., p. 45-51.